

# Impulsive-Compulsive Sexual Behavior

By Thomas M. Mick, MD, and Eric Hollander, MD

## ABSTRACT

Impulsive-compulsive sexual behavior is a little studied clinical phenomenon which affects ~5% to 6% of the population. In the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision*, it is classified as an impulse control disorder not otherwise specified or a sexual disorder not otherwise specified. It may be placed in a possible new category in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* called substance and behavioral addictions. This clinical entity is reviewed and the merit of classifying it as an addiction is assessed. Information is presented regarding its diagnostic criteria, epidemiology, types of behavior it can involve, relationship to hypersexuality, comorbidities, treatment, and etiology. The data regarding this disorder and its overlap with chemical addiction is limited. If the two disorders are to be grouped together, further data are needed.

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## FOCUS POINTS

- Compulsive sexual behavior has been quantified using the statistic of total sexual outlet (number of orgasms/week).
- People with compulsive sexual behavior referred for treatment generally show a total sexual outlet of  $\geq 7$ .
- Compulsive sexual behavior has been characterized as a behavioral addiction and an obsessive-compulsive spectrum disorder.
- Compulsive sexual behavior frequently has associated comorbidities of mood disorders, anxiety disorders, and substance abuse.

## INTRODUCTION

Some individuals have a great deal of difficulty controlling their sexual behavior. They have frequent intrusive thoughts about sex and repeatedly engage in sexual behavior that can become out of control. This can result in numerous problems (sexually transmitted diseases, exposure to human immunodeficiency virus, unwanted pregnancies, legal consequences, problems in maintaining a relationship or a marriage, domestic violence, etc.).<sup>1</sup>

For some individuals, the object of their sexual gratification is conventional and for others it is unconventional. The former type of behavior has been called by several names, compulsive sexual

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behavior,<sup>2</sup> hyperphilia,<sup>3</sup> hyperactive sexual desire disorder,<sup>4</sup> paraphilia-related disorder<sup>5</sup> sexual addiction,<sup>6,7</sup> and sexual impulsivity.<sup>8</sup> It does not have a distinct code in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision, (DSM-IV-TR)* but can be classified as impulse control disorder, not otherwise specified; or as a sexual disorder, not otherwise specified. The unconventional sexual type of behavior is classified as a paraphilia. Paraphilias are marked by an obsessive preoccupation with a socially unconventional sexual behavior that involves nonhuman objects, children or other non-consenting persons, or the suffering or humiliation of oneself or one's partner. This article will focus on excessive conventional sexual behavior, as opposed to paraphilias. We will refer to this type of behavior as impulsive-compulsive sexual behavior.

We use the term impulsive-compulsive sexual behavior because an impulsive component (pleasure, arousal, or gratification) is involved in initiating the cycle, and a compulsive component is involved in the persistence of the behavior. The use of this term in this manner does not indicate we think the disorder should be classified as a compulsive disorder or impulsive disorder. It merely is descriptive.

The classification of impulsive-compulsive sexual behavior in *DSM-IV-TR* is less well defined than paraphilia and it may be changing in *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)*. In the *DSM-IV-TR*, paraphilic disorders have their own distinct category and impulsive-compulsive sexual behavior is classified as an impulsive-compulsive disorder not otherwise specified (NOS) or as a sexual disorder NOS. Impulsive-compulsive sexual behavior may be classified in *DSM-V* in a new category of disorders named behavioral and substance addictions. This tentative category might include substance-related disorders and several impulse-control disorders (pathological gambling, pyromania, and kleptomania), as well as others currently in the category of impulse control disorders not otherwise specified (impulsive-compulsive sexual behavior, Internet addiction, and compulsive buying).<sup>9</sup>

This article will review the disorder of impulsive-compulsive sexual behavior and will assess the merit of classifying impulsive-compulsive sexual behavior as an addiction.

## DIAGNOSTIC CRITERIA

At this stage, the *DSM-IV-TR* has no operational criteria for impulsive-compulsive sexual behavior. Nevertheless, there have been efforts

to produce such criteria. Kafka and Prentky<sup>5</sup> operationally defined impulsive-compulsive sexual behavior (except that he termed it "Paraphilia Related Disorder") as "sexually arousing fantasies, urges, or activities involving culturally sanctioned sexual interests and behaviors that increase in frequency or intensity (for at least 6 month's duration) so as to interfere with the capacity for reciprocal affectionate activity."<sup>4</sup>

Coleman and colleagues<sup>10</sup> have proposed a definition for what he terms "compulsive sexual behavior"; which, if modified, can serve as a definition for impulsive-compulsive sexual behavior. This condition is present when, "the patient has recurrent and intense normophilic or paraphilic sexually arousing fantasies, sexual urges, and behaviors that cause clinically significant distress in social, occupational, or other important areas of functioning; and these fantasies, sexual urges, and behaviors are not simply due to another medical condition, substance use disorder, another Axis I or II disorder, or developmental disorder."<sup>10</sup> His definition considers both paraphilic and non-paraphilic sexual behaviors. If one considers only normophilic (conventional) sexual behavior according to their definition, then the criteria could serve as a definition of impulsive-compulsive sexual behavior.

Both characterizations highlight the recurrent nature of the disorder, the intensity of the condition, the fact that it can involve fantasies, urges, or actions, and that this behavior interferes with important areas of functioning. For Kafka and Prentky,<sup>5</sup> this involves "reciprocal affectionate activity" and for Coleman and colleagues<sup>10</sup> it includes "social, occupational, and other areas of functioning". There are differences between the definitions, but there seems to be more overlap than difference.

Even so, none of these definitions represent a consensus opinion. This is an area that needs to be addressed as it hinders research into this disorder generally, but poses a specific problem when considering its epidemiology. No systematic large-scale studies have been performed on this disorder's epidemiology. The first step in conducting systematic epidemiological research in this area would be to develop a consensus definition and then create an empirically validated instrument for this disorder. This could then be used in ongoing, large-scale epidemiological studies and provide information on this condition's incidence, prevalence, and association with other psychiatric disorders.

## EPIDEMIOLOGY

As aforementioned, no systematic epidemiological studies of this condition have been performed, but it has been estimated that 5% to 6% of the general population is affected.<sup>11</sup> It has been reported to be more common in men than women. Carnes<sup>12</sup> estimates that the ratio of male to female is 3:1.

## TYPES OF IMPULSIVE-COMPULSIVE SEXUAL BEHAVIOR

Coleman<sup>1</sup> has classified at least seven subtypes of impulsive-compulsive sexual behavior: compulsive cruising and multiple partners, compulsive

fixation on an unattainable partner, compulsive autoeroticism (masturbation), compulsive use of erotica, compulsive use of the Internet for sexual purposes, compulsive multiple love relationships, and compulsive sexuality in a relationship.

Coleman<sup>1</sup> has identified seven types of impulsive-compulsive sexual behavior listed in Table 1.

## THE TOTAL SEXUAL OUTLET AND HYPERSEXUALITY IN IMPULSIVE-COMPULSIVE SEXUAL BEHAVIOR

Many would grant that sexual behavior can become excessive, but, as with any phenom-

**TABLE 1.**  
**Types of Nonparaphilic Compulsive Sexual Behavior<sup>10</sup>**

### ***Compulsive Cruising and Multiple Partners***

- Constantly searching or "scanning" the environment for a potential partner; relentless search to find, conquer, and satisfy the demand for a sexual outlet; insatiable demand for multiple partners as part of a strategy for management of anxiety and maintenance of self-esteem
- Cruising as ritualistic and trance-inducing
- Partners are "things" to be used

### ***Compulsive Fixation on an Unattainable Partner***

- Compulsive fixation on unattainable partner despite lack of a reciprocal response
- Fantasies are elaborated upon without the intrusion of reality
- The fantasy is fueled by the potential and fantasized reciprocation of love
- The love object is idealized and fictionalized

### ***Compulsive Autoeroticism***

- Obsessive and compulsive drive toward sexual self-stimulation of the genitalia
- Cessation of masturbation is caused by exhaustion, injury, or extreme social pressure rather than sexual satisfaction
- Loneliness is felt keenly after an orgasm
- Masturbating 5–15 times a day is common
- Physical injury is common
- Interference in occupational, social, interpersonal, and intimacy functioning

### ***Compulsive Use of Erotica***

- Obsessive and compulsive drive to seek sexual stimulation through erotica
- Hiding, hoarding, and/or compulsive collecting of erotic materials
- Spending excessive amounts of money seeking/buying erotica

### ***Compulsive Use of the Internet***

- Obsessive and compulsive use of the Internet seeking sexual gratification
- Compulsive chatting, seeking of fantasized sexual partners
- Spending excessive amounts of time, which causes interference in occupational, social, interpersonal, and intimacy functioning

### ***Compulsive Multiple Love Relationships***

- Obsession and compulsion toward finding the intense feeling of a new relationship
- Lack of capacity to freely choose multiple love relationships
- Fantasy and role-playing are essential in relationships; reality is intrusive
- Highly skilled romance artists

### ***Compulsive Sexuality in a Relationship***

- Compulsive expressions of sexuality in a relationship
- Demanding sexual expression through manipulation, coercion, or violence
- Absence of expression of sexuality results in anxiety, depression, and anger
- Unending needs for sex, expressions of love, attention, and signs of affections that temporarily relieve anxiety
- Relationships are characterized by intense possessiveness, jealousy, and anger

Reprinted from Coleman E, Raymond N, McBean A. Assessment and treatment of compulsive sexual behavior. *Minn Med.* 2003;86:42-47. Copyright (2003) Minnesota Medical Association.

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enon which exists on a continuum, it is hard to define the point at which normal becomes excessive. It is not possible to determine a universally agreed upon normal amount of sexual behavior, but the statistic known as total sexual outlet does provide some guidance. Total sexual outlet, originally defined by Kinsey and colleagues<sup>13</sup> as the number of orgasms per week, is one way to define hypersexuality. Kafka<sup>14</sup> defined someone as hypersexual if they have >7 orgasms per week for >6-month period after 15 years of age.

This level was chosen based on surveys which show only between 2% and 8% of men, including adolescents, report having persistently >7 orgasms/week. Kinsey and colleagues<sup>13</sup> found that only 7.6% of American males (adolescence to 30 years of age) had a mean total sexual outlet/week of >7 for at least 5 years.<sup>12</sup> In the most recent survey of sex in American males,<sup>15</sup> 14.5% masturbated 2–6 times/week for the current year, 1.9% masturbated daily, and an additional 1.2% masturbated more than once a day during the past year.

Therefore, community samples show that males with a total sexual outlet of  $\geq 7$  comprise between 2% to 8% of males. What is the total sexual outlet of males with impulsive-compulsive sexual behavior? Is it higher than normal?

Kafka<sup>14</sup> and Kafka and Hennen<sup>16</sup> performed studies of males with impulsive-compulsive sexual behavior and paraphilia, which revealed that both groups have elevated total sexual outlet and that they did not differ with respect to total sexual outlet. In his first study, Kafka<sup>14</sup> evaluated a group of 100 males with either paraphilia (n=65) or impulsive-compulsive sexual behavior (n=35). Seventy-two percent reported a total sexual outlet of  $\geq 7$  for a minimum of 6 months duration after 15 years of age. Fifty-seven percent reported a total sexual outlet of  $\geq 7$  for period of  $\geq 5$  years. Both the paraphilic and non-paraphilic group self-reported the onset of highest frequency as 20 years of age and a median duration of 9 years. The impulsive-compulsive sexual behavior group spent 1–2 hours per day involved in sexual urges, fantasies, or activities.

Kafka and Hennen<sup>16</sup> then evaluated another group of patients appearing for treatment of paraphilia (n=88, 22 of whom were excluded to give an n=64) and impulsive-compulsive sexual behavior (n=32, 5 of whom were excluded to give an n=27). Once again, there were no differences between the paraphilia group and impulsive-compulsive sexual behavior group on any measures

of recent or current sexual behavior. Over 57% of the sample had been engaging in sexual behavior >7 times/week over the past 6 months. In fact, the only reported difference in terms of frequency or demographics of sexual behavior was that the paraphilia patients noted an earlier onset of high frequency repetitive sexual acts (20.7 $\pm$ 6.4 years of age) compared with the sexually impulsive-compulsive patients (23.9 $\pm$ 8.6 years of age).

Based on these two results, individuals presenting for treatment of impulsive-compulsive sexual behavior have a high total sexual outlet when compared to the total sexual outlet of the average American male; however, this does not imply that individuals with high total sexual outlet are pathologically sexual. No assessment has been made of people with high total sexual outlet to determine if they have impulsive-compulsive sexual behavior or comorbid Axis I or II pathology.

## COMORBIDITY

Multiple studies have documented a large degree of Axis I comorbidity with impulsive-compulsive sexual behavior. They are reviewed below.

Kafka and Prentky<sup>17</sup> prospectively evaluated 60 subjects who were referred (by self or others) for treatment for paraphilias (n=34) and/or impulsive-compulsive sexual behavior (n=26). The paraphilia subjects and the impulsive-compulsive group did not differ significantly in the prevalence of Axis I lifetime disorders. Both groups demonstrated elevated lifetime rates of mood disorders (76.7%), especially early-onset dysthymia (53.3%); psychoactive substance abuse (46.7%), especially alcohol abuse (40.0%); and anxiety disorders (46.7%), especially social phobia (31.6%). Individual rates for people with impulsive-compulsive sexual behavior are mood disorder (80.8%), early onset dysthymia 57.7%, and anxiety disorder 46.2%. The predominant forms of repetitive sexual behaviors practiced by the paraphilia and the impulsive-compulsively sexual were “non-paraphilic” in nature: compulsive masturbation (73.3%), protracted promiscuity (70.0%), and dependence on pornography (53.3%).

Kafka and Prentky<sup>18</sup> performed another study on subjects referred for treatment of impulsive-compulsive sexual behavior and paraphilia to see they differed in their rates of childhood ADHD. Sixty subjects (paraphilia: n=42; impulsive-compulsive sexual behavior: n=8) were evaluated, and it was found that the lifetime rates of Axis I disorders differed only the rate of childhood attention-deficit/hyperactivity disorder (ADHD).

50% of the paraphilia subjects and 17% of those with impulsive-compulsive sexual behavior had childhood ADHD. This difference was significant ( $P=.01$ ). The lifetime rates for the other Axis I disorders in those with compulsive sexual behavior were 66.7% for mood disorder (61.1% dysthymic disorder), 42.9% for anxiety disorder (22.2% social phobia), 38.9% for any substance abuse, and 16.7% for impulsivity NOS.

Kafka and Hennen's<sup>19</sup> most recent comorbidity study was performed in 2002. The results were similar to the 1998 study.<sup>18</sup> They evaluated another group of patients appearing for treatment of paraphilia ( $n=88$ , 22 of whom were excluded to give an  $n=64$ ) and impulsive-compulsive sexual behavior ( $n=32$ , five of whom were excluded to give an  $n=27$ ). Once again, the two groups' rates of lifetime Axis I disorders only differed significantly in their rate of childhood ADHD. Forty-two of the paraphilia subjects had ADHD compared with only 18.7% of those with impulsive-compulsive sexual behavior. The most prevalent comorbidities were mood disorders (71.6%), especially early onset dysthymic disorder (55%) and major depression (39%). Anxiety disorders (38.3%), especially social phobia (21.6%) and psychoactive substance abuse (40.8%), especially alcohol abuse (30%), and impulsive disorder NOS (26.6%) were reported as well. The individual rates for individuals with impulsive-compulsive sexual behavior were mood disorder (71.8%), dysthymia (68.7%), any anxiety disorder (37.5%), social phobia (25%), any substance abuse (25%), and impulsivity NOS (15.6%). In a subsequent examination, Kafka and Hennen<sup>16</sup> found these subjects tended to spend between 1–2 hours per day involved in their sexual thoughts, urges, or behaviors (termed unconventional sexual behavior), and 15–30 minutes per day in sexual behavior that involved a mutually consenting relational context (termed conventional sexual behavior).

In several studies<sup>17–19</sup> subjects were composed of subjects who were referred for treatment. Such a sample may represent a population that is more ill and therefore not representative of the characteristics of the general population of individuals with impulsive-compulsive sexual behavior. The comorbidities identified in his studies, may only represent comorbidities in those who were ill enough to be referred for treatment.

Comorbidity studies have been performed on subjects who were obtained in ways other

that patient referral. Black and colleagues<sup>20</sup> and Raymond and colleagues<sup>21</sup> have studied comorbidity in impulsive-compulsive samples that were obtained through advertisements. They obtained similar, but not identical the results of Kafka and Hennen,<sup>19</sup> and Kafka and Prentky.<sup>17,18</sup> Black and colleagues<sup>20</sup> evaluated the repetitive sexual behavior of 28 men and eight women who responded to advertisements for "persons . . . who have a problem with compulsive sexual behavior." The subjects were evaluated for comorbid Axis I and Axis II disorders using the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised* (SCID) and the SCID for Personality Disorder. Most subjects reported excessive conventional (non-paraphilic) sexual preoccupations and behavior; a minority reported unconventional (paraphilic behaviors). Their subjects exhibited a variety of Axis I and Axis II disorders. Thirty-nine percent reported a history of major depression or dysthymia, 42% has a history of phobic disorder, and 64% had a history of substance use disorder. Forty-four percent of their subjects met criteria for personality disorder and the most frequent were histrionic, paranoid, obsessive compulsive, and passive aggressive types.

Black and colleagues<sup>20</sup> also assessed the lifetime prevalence of "compulsive" behaviors with the Minnesota Impulsive Disorders interview. They found that 14% met lifetime criteria for compulsive buying and kleptomania, 6% trichotillomania, 3% intermittent explosive disorder, 8% pyromania, 11% pathological gambling, and 8% compulsive exercise.

In another comorbidity study, Raymond and colleagues<sup>21</sup> collected data on the impulsive and compulsive characteristics of 23 subjects (21 men, 2 women) subjects with repetitive sexual behavior. Eight-eight percent of their sample met diagnostic criteria for a current Axis I disorder and 100% for lifetime. Thirty-three of the subjects had a current mood disorder and 42% had a current anxiety disorder. Lifetime prevalence for mood disorder was 71% and 96% for anxiety disorders. Seventy-one percent met criteria for any substance abuse diagnosis. Approximately 50% of the sample met criteria for an Axis II disorder.

Raymond and colleagues<sup>21</sup> did not find that the subjects presented with as pervasive a preoccupation with sexual desire, urges, or behaviors as in Kafka and Hennen's sample.<sup>14,16</sup> Raymond and colleagues found that 80% subjects reported spending

≤60 each day thinking about their sexual behavior; whereas, in one study by Kafka<sup>14</sup> and one study by Kafka and Hennen,<sup>16</sup> men with compulsive sexual behavior and paraphilia tended to spend 1–2 hours per day involved with sexual desire, urges, or behaviors. Unfortunately, Raymond and colleagues<sup>21</sup> did not report total sexual outlet for the subjects. Therefore, no additional comparison is possible between their subjects and those of Kafka and colleagues.<sup>14,16</sup> It is possible that the subjects in the study by Raymond and colleagues<sup>21</sup> spent less time involved with sex because the sample involved people responding to newspaper adver-

tisement to participate in a study. The subjects in Kafka's studies, as noted by the author,<sup>14,16</sup> were people presenting for treatment (some of whom were under a court order) and therefore may have more severe sexual preoccupation. These results are summarized in Table 2.

Unlike Kafka and colleagues,<sup>17-19</sup> Black and colleagues,<sup>20</sup> and Raymond and colleagues<sup>21</sup> Quadland<sup>22</sup> found no excess psychological comorbidity in a group of 30 gay men presenting for treatment of sexual behavior with an age-matched group of 24 gay men presenting for treatment of nonsexual problems. This study

**TABLE 2.**  
**Lifetime Rates of Comorbid Axis I Disorders; Hours per Day Spent on Sexual Behavior, Thoughts, or Urges; and Main Form of Sexual Activity in Individuals with Impulsive-Compulsive Sexual Behavior**

<i>Authors (Year)</i>	<i>Group</i>	<i>Lifetime Axis I Comorbidity</i>	<i>Time/Day</i>	<i>Main Sexual Activity</i>
Kafka and Prentky (1994) <sup>17</sup>	26 men referred for treatment of PRD	80.8% any mood disorder 61.5% dysthymia 46.2% any anxiety disorder 46.2% social phobia 46.2% any substance abuse	Not given	84.6% masturbation 80.8% multiple sexual partners/compulsive seeking of sex partners 73% pornography
Kafka and Prentky (1998) <sup>18</sup>	18 men referred for treatment of PRD	66.7% any mood disorder 61.1% dysthymia 42.9% any anxiety disorder 22.2% social phobia 38.9% any substance abuse 16.7% impulsivity NOS	Not given	72.2% promiscuity 72.2% masturbation 61.1% pornography
Kafka and Hennen (2002, 2003) <sup>16,19</sup>	32 men referred for treatment of PRD	71.8% any mood disorder 68.7% dysthymia 37.5% any anxiety disorder 25% social phobia 25% any substance abuse 15.6% impulsivity NOS 18.7% ADHD	(unconventional sexual behavior) 15–30 minutes/day spent in sexual behavior that involved mutual consent, in a relational context (conventional sexual behavior)	72.5% compulsive masturbation 47.5% pornography 44% multiple sexual partners
Black et al (1997) <sup>20</sup>	28 men, 8 women answering newspaper advertisement for study on "compulsive sexual behavior"	39% any mood disorder 42% social phobia 64% any substance abuse	Not given	22% multiple sexual partners/compulsive seeking of sex partners 17% compulsive masturbation
Raymond et al (2003) <sup>21</sup>	21 men, 2 women answering an advertisement for a study on "compulsive or addictive sexual behavior"	33% any mood disorder 42% any anxiety disorder 71% any substance abuse	80% ≤60 minutes/day thinking about sex 72% ≤60 minutes with urges/day	82% multiple sexual partners/compulsive seeking of sex partners 52% compulsive masturbation

PRD=personality disorder; NOS=not otherwise specified; ADHD=attention-deficit/hyperactivity disorder.

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does have some methodological limitations, however. The researchers assessed psychological comorbidity using the Brief Symptom Inventory (BSI).<sup>23</sup> They found no significant difference in Global Severity Index inventory scores (a measure of the distress severity) between individuals with impulsive-compulsive sexual behavior and the individuals seeking psychotherapy for reasons other than sexual compulsion. From this, the researchers concluded that “sexually compulsive men are not excessively neurotic.”

This may be an overstatement. The BSI does not assess for lifetime history of Axis I disorders or for substance abuse. It is a 53-item self-report scale used to measure nine primary symptom dimensions (somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism), and it measures the experience of symptoms in the past 7 days, including the day the BSI was completed. The BSI could not diagnose disorders in a person without current symptoms and it would not diagnose individuals with substance abuse; it does not assess substance abuse at all. Given the limitations of the BSI, and the weight of evidence of the Kafka and Prentky,<sup>17,18</sup> Black and colleagues,<sup>20</sup> and Raymond and colleagues<sup>21</sup> studies, individual patients are likely to have a lifetime history of an Axis I disorder. Therefore, patients with impulsive-compulsive sexual behavior should be carefully screened for mood disorders, anxiety disorders, and substance abuse.

## TREATMENTS

### Medications

Multiple medications have been reported to be effective in the treatment of compulsive sexual behavior. One randomized controlled trial, three open-label trials, and multiple case studies of the treatment of compulsive sexual behavior have been reported.

#### Randomized Clinical Trial

Wainberg and colleagues<sup>24</sup> conducted a randomized clinical trial involving 28 homosexual men. Fifteen subjects received placebo for 12 weeks and 13 received 12 weeks of citalopram 20–60 mg/day. Psychotherapy was not a treatment component of this study. Both groups demonstrated significant improvements in the main outcome measures of risky sexual behavior and measures of sexually compulsive behavior

(Yale-Brown Obsessive Compulsive Scale-compulsive sexual behavior and the compulsive sexual behavior index decreased). However, these improvements were not significantly different when the two groups were compared with each other. Some significant differences between the groups were found, but most of these lost significance if they were thought to be due to a side effect of the drug. One difference between the drug and placebo group remained significant after controlling for sexual side effects. This was a significant decrease in sexual drive/desire in the drug group.

The lack of a differential response in this study mirrors the tendency of impulse control disorder studies generally to have large placebo responses. For example, in a 16-week, double-blind, placebo-controlled trial of paroxetine in 76 pathological gamblers,<sup>25</sup> there was a robust response to treatment (59% response rate) and placebo (49%). These results did not differ significantly when they were compared to each other. The sample size was small (drug: 13, placebo: 15) and may not have had enough power to detect differences between the drug group and the placebo group due to the robust placebo response.

Even though the drug group experienced a decrease in sexual desire and had sexual side effects, they remained satisfied with their sex life. In the treatment of impulsive-compulsive sexual behavior, the challenge is to reduce compulsive sexual behaviors without eliminating sexual desire or diminishing enjoyment of other sexual behavior. Insofar as this was accomplished in this study, it was a success.

#### Open-Label Trials

Fluoxetine was used in an open-label treatment study of men responding to a newspaper advertisement “for the evaluation and treatment of sexual addictions/compulsions.”<sup>5</sup> Ten men with impulsive-compulsive sexual behavior and 10 men with paraphilias were enrolled in the study. Upon initial evaluation, it was found that 95% of the subjects met criteria for dysthymia. The subjects reporting the presence of mild to severe depressive symptoms treated with fluoxetine had decreases in their sexual behavior.

Kafka<sup>26</sup> treated 24 men with paraphilias (n=13) and impulsive-compulsive sexual behavior (n=11) with sertraline (mean dose: 100 mg/day; mean duration: 17.4±18.6 weeks). He found that sertraline produced a statistically significant reduction in unconventional total sexual outlet and average

time per day in both paraphilias and impulsive-compulsive sexual behavior without adversely affecting conventional total sexual outlet.

Kafka and Hennen<sup>27</sup> reported a case series in which methylphenidate sustained release 40 mg PO QD was added to ongoing fluoxetine treatment, which showed that the addition of a stimulant had significant effects in decreasing the number of excessive sexual behaviors (paraphilic and non-paraphilic) and in decreasing the average time per day spent in these behaviors.

### **Retrospective Chart Review**

Coleman and colleagues<sup>28</sup> performed a retrospective chart review of 14 patients treated with nefazodone for impulsive-compulsive sexual behavior. They found that the mean dose of nefazodone was 200 mg PO QD. They had good results for their subjects and note "Of the subjects who remained on long-term nefazodone therapy, six (55%) reported good control of sexual obsessions and compulsions and five (45%) reported a remission of sexual obsessions and compulsions." These improvements were not associated with unwanted sexual side effects.

### **Case Reports**

Many different agents have been cited in case reports as helpful in treating impulsive-compulsive sexual behavior and paraphilias: lithium,<sup>29</sup> buspirone,<sup>30,31</sup> tricyclic antidepressants,<sup>32,33</sup> selective serotonin reuptake inhibitors (SSRIs),<sup>34</sup> atypical antipsychotics<sup>36</sup> naltrexone,<sup>36</sup> and topiramate<sup>37,38</sup> have all been reported to be helpful in treatment of sexual impulsivity-compulsivity and paraphilia. Although used widely in the treatment of criminal sexual offenders (pedophiles), anti-androgen treatment like medroxyprogesterone acetate and gonadotropin-releasing hormone have not been used to treat sexual impulsivity-compulsivity.<sup>3</sup> These agents probably would not be ideal treatments as they tend to eliminate sexual desire entirely.

### **Psychotherapies**

As with medications, there is little controlled research into psychotherapeutic treatments for impulsive-compulsive sexual behavior. Case studies<sup>39</sup> have been reported. There is only one published study<sup>22</sup> in which psychotherapy was assessed that will be discussed below. Nevertheless, there are many popular self help and treatment programs for sexual compulsivity. Sexaholics Anonymous currently has chapters in >37 countries and Sex Addicts Anonymous

has >750 chapters worldwide in 14 countries. There are multiple other 12-step treatment programs: Sex and Love Addicts Anonymous, Sexual Recovery Anonymous, Co-dependents of sex addicts, S-Anon International Family Groups, and Sexual Compulsives Anonymous. These programs follow a similar pattern to 12-step programs offered by Alcoholics Anonymous. Their effectiveness has not been clearly demonstrated.

In the one study of psychotherapy and impulsive-compulsive sexual behavior, Quadland<sup>22</sup> employed group therapy in the treatment of homosexual and bisexual men who identified themselves as being sexually impulsive-compulsive. To participate in this study, individuals needed to attend a minimum of five treatment sessions. On average, individuals remained in treatment for a mean of 20 weeks. Quadland<sup>22</sup> described the group-therapy sessions as follows "members had the option of making a contract with the group about a behavior they wanted to change. Groups sessions usually began with a review of the contracts of the previous week, and individuals' thoughts and feelings about their various successes and failures."

Data was collected from two years of treatment. Six months after completing group therapy, subjects received a follow-up survey that assessed change from baseline. The impulsive-compulsive subjects reduced their mean current number of sexual partners from 11.5–3.3/month while the control group's mean number of partners did not change. Those with impulsive-compulsive sexual behavior also significantly reduced their sex with partners seen only once, sex in public settings, and use of alcohol or drugs with sex.

### **Practical Treatment Guidelines**

There is little randomized controlled data to support treatment recommendations, so any recommendations we make will be somewhat limited. Nevertheless, it is possible to make some broad recommendations based on our experience in the treatment of impulse control disorders. In choosing a medication, it can be helpful to select an agent based on comorbidity and prominent symptoms. If the individual has obsessive-compulsive disorder, depressive, and anxiety symptoms, treat with an SSRI; if the individual has addictive symptoms treat with opiate antagonists; comorbid bipolar spectrum, treat with mood stabilizers; if the patient presents with ADHD symptoms, treat



with stimulants or dopamine norepinephrine uptake inhibitors.

Benzodiazepines are generally not recommended in the treatment of individuals with impulsive-compulsive disorders. They can be disinhibiting and may actually promote more impulsive behavior.<sup>40</sup> Their use should be restricted to treat acute agitation and aggression in emergency situations.

Although little controlled research has been done on the effects of psychotherapy on this disorder, it generally thought to be helpful when used in conjunction with pharmacotherapy.<sup>1</sup> In the view of these authors, maintaining a flexible and eclectic approach seems reasonable given the early stage of how psychotherapy effects change individuals with impulsive-compulsive sexual behavior. All therapy needs to be tailored to the needs of the individual. Effective roles can be played by psychodynamic, group, couples, and cognitive-behavioral therapy (CBT).

Some useful, but by no means exhaustive observations made about these types of therapy are as follows. The psychodynamic principle of identifying and attempting to understand one's feelings in the treatment of this condition is especially important. Many intense emotions are brought to fore during the treatment of the impulsive-compulsive sexual behavior patient. Some therapists may over-identify with their patient's behaviors and other might find their behaviors scary and avoid the treatment. Other important areas in psychodynamic treatment are assessing family of origin conflicts and exploring models of healthy intimacy.<sup>41</sup>

CBT can be useful. It can help patients identify triggers for sexual behavior and help them develop better coping mechanisms. This will help to avoid relapse. CBT can also teach patients healthier ways to manage stress, anxiety, and depression, which can trigger sexual behavior.

Group therapy is often helpful as the group helps patients overcome feelings of shame and isolation. The group, with the help of the therapist, can also provide an experience of what is like to be involved in emotionally intimate relationships.

Couples therapy can help also. It can address difficulties in the relationship caused by the sexual behavior of the patient which frequently are a source of great stress and discord. It is also hoped that it will allow the patient to experience better sex in a committed relationship and improve intimacy in their relationship.

## ETIOLOGY

Brain abnormalities can result in aberrant sexual behavior. The most well known is Kluver-Bucy Syndrome. Kluver-Bucy syndrome involves combinations of placidity, hyperorality, visual agnosia, and hypersexuality. The syndrome was first observed in experiments with monkeys in which bilateral lesions were placed in the temporal lobes of were placed. Further research<sup>42</sup> has shown that the most important site to produce these behaviors is damage to the amygdala in the temporolimbic lobes. It rarely occurs in human and, when it does, it rarely results in hypersexuality.<sup>42</sup> It tends to result in placidity and hyperorality. The etiologies of human Kluver-Bucy syndrome are Alzheimer's disease, herpes simplex encephalitis, ischemia or anoxia, temporal lobectomies, progressive subcortical gliosis, adrenoleukodystrophy, Rett's syndrome, systemic lupus erythematosus, porphyria, limbic encephalitis, multicentric glioblastoma multiforme, and carbon monoxide intoxication.<sup>42</sup>

Injuries to the frontal lobes from trauma have been reported to result in hypersexuality.<sup>43,44</sup> Multiple sclerosis has been reported to result in hypersexuality.<sup>45</sup> Other conditions have been reported to result in aberrant sexual behavior, including epilepsy,<sup>46</sup> and dementia<sup>47</sup> treatment of Parkinson's disease with dopaminergic agents.<sup>48</sup> How these conditions result in the development of aberrant sexual behavior remains to be elucidated.

The monoamines, serotonin, dopamine, and norepinephrine are known to play a crucial role in normal human sexual functioning.<sup>4</sup> Treatment of individuals with paraphilias and impulsive-compulsive sexual behavior has been successfully undertaken with serotonin modifying drugs.<sup>4</sup> Nevertheless, little is known (outside of pharmacologic effects) of monoamine functioning in impulsive-compulsive sexual individuals. Further research in this area is required.

Androgens play a role in normal human sexual interest/desire. A correlation between testosterone level and the frequency of sexual thoughts has been described in adolescent males.<sup>49,50</sup> This relationship has not been demonstrated in adult males.<sup>51</sup> Nevertheless, it is known that hypogonadal or castrated men experience declines in sexual interest which are reversible with exogenous testosterone. As is the case with neurotransmitters, no controlled endocrine studies have been performed on subjects with impulsive-compulsive sexual behavior.

It is known that sexual desire involves environmental/nurture influences, endocrine factors, the monoamine neurotransmitters, nitric oxide, and neuropeptides.<sup>4</sup> How these factors relate to one another as a whole to produce normal human sexual desire and disordered states such as impulsive-compulsive sexual behavior remains to be elucidated.<sup>4</sup>

### **IMPULSIVE-COMPULSIVE SEXUAL BEHAVIOR AS A BEHAVIORAL ADDICTION**

Some who see impulsive-compulsive sexual behavior as an addiction hypothesize that repetitive, high-emotion, high-frequency sexual behavior can result in changes in neural circuitry that help perpetuate the behavior.<sup>52</sup> This is similar to current theories about chemical addiction except that instead of drugs causing the changes in neural circuitry, sexual behavior is purported to cause these changes.

Researchers<sup>53,54</sup> have argued that it is problematic to categorize impulsive-compulsive sexual behavior as an addiction. They argue that it is unjustified because there are no studies to document that a physiological withdrawal syndrome occurs.<sup>53,54</sup> Therefore, it is argued that the presence of tolerance or withdrawal phenomena. As an aside, it is worth noting that addiction is not a category in the *DSM-IV-TR*. Substance use disorders are categorized as abuse, dependence, withdrawal, and intoxication. Of these categories, dependence with physiological dependence (with evidence of tolerance or withdrawal) is most likely equivalent to addiction.

Although individuals with impulsive-compulsive sexual behavior may experience some psychic and autonomic distress (heart pounding, sweaty) if prevented from engaging in sex, this does not qualify as physiologic withdrawal. Does that mean that they do not have an addiction? This is a point worthy of debate. Using the current *DSM-IV-TR*, an individual can qualify for alcohol dependence without experiencing withdrawal or tolerance. If this is true of alcohol dependence, why can it not be true of impulsive-compulsive sexual addiction? Further, the National Institute on Drug Abuse has considered behavioral addictions, such as impulsive-compulsive buying, to be "cleaner" and more homogeneous models of substance addictions because these conditions may share clinical features and perhaps underlying brain circuitry, and these features and circuitry are not altered by the ingestion of exogenous substances.<sup>9</sup>

Another objection raised to classifying impulsive-compulsive sexual behavior as an addiction has been formulated by Martin and Petry<sup>52</sup> They argued that any bad habit can be labeled an addiction if one relaxes the boundaries for tolerance and withdrawal far enough, and gave an example of excessive television watching in children. Watching too much television causes impairment in family and school functioning. Its sedentary nature results in health consequences such as weight gain. It has relapses "that are often precipitated by fatigue or boredom, or the airing of favorite program." Excessive television watching has many phenomenological similarities to an addiction. So do many bad habits. In the absence of other evidence, labeling a bad habit an addiction has the consequence that it "medicalizes its symptoms ... (and may result in) removing responsibility from the individual, family"

Martin and Petry<sup>52</sup> make a cogent point that must be answered. What evidence should be mustered to respond to this objection? Potenza's response<sup>55</sup> to this question as it relates to pathological gambling may provide an answer. He examined the data that supports the grouping of pathological gambling with substance use disorders. He also examined the overlap in pathological gambling and substance use data in terms of phenomenology, social factors, comorbid disorders, personality features and behavioral measures, investigations of neurotransmitter systems involved in both chemical addiction and pathological gambling, neuroimaging, genetic factors, such as twin studies and treatment studies. After weighing the evidence, he concluded that "there exist substantial similarities between pathological gambling and substance use disorders. Further research is indicated prior to categorizing pathological gambling and other impulsive-compulsive disorders together with substance use disorders."

Research on impulsive-compulsive sexual behavior is in its infancy and much of the work that has been done in pathological gambling has not yet been done in impulsive-compulsive sexual behavior. Using the same categories of evidence used by Potenza<sup>55</sup> to assess pathological gambling, what evidence is there to group impulsive-compulsive sexual behavior with chemical addictions?

There are phenomenological similarities. Goodman<sup>56</sup> has pointed out that there are many similarities between repetitive sexual behavior and addictions, including failure to control behavior and continuation of the behavior despite harmful consequences.

Martin and Petry<sup>52</sup> have pointed out further phenomenological similarities chemical addictions and behavioral addictions. Both follow a pattern of an exposure to a rewarding chemical or behavior that can lead to an addiction. This exposure leads to an addiction if the exposed individual is biologically and psychologically predisposed. When an addiction develops, whether it is chemical or behavioral, individuals have great difficulty controlling their behavior (impaired control) and they become more focused on pursuing and finding the object of their addiction (salience). Individuals with behavioral addictions and chemical addictions also have cravings which are triggered in similar fashions. In both cases, cravings are triggered by memories, affective states, and situations associated with the behavioral or chemical addiction.

Besides phenomenological similarities, one can also look at comorbidity studies,<sup>17-21</sup> which show a high co-occurrence of substance abuse and impulsive-compulsive sexual behavior. In the aforementioned studies, co-occurrence of substance abuse ranged from 25% to 71%.

The comorbidity data, one may argue, also supports conceptualizing impulsive-compulsive sexual behavior as either an anxiety or mood disorder. In the studies above, the prevalence rates for anxiety disorder ranged between 42% to 46% and 33% to 80% for mood disorder.<sup>17-21</sup> The high rate of mood disorder has caused some to theorize that impulsive-compulsive sexual behavior is a result of drive dysregulation in association with a mood disorder. The high rate of anxiety disorders has prompted some to conceptualize impulsive-compulsive sexual behavior as a variant of obsessive-compulsive disorder. According to this theory, sexual behavior is engaged in to relieve anxiety. This relief is only temporary and is followed by further distress. A self-perpetuating cycle of anxiety and distress and compulsive behavior ensues.<sup>1,5758</sup>

Other than phenomenology and comorbidity data, data which could justify the classification of impulsive-compulsive sexual behavior as an addiction are limited. Neuroimaging studies in individuals with impulsive-compulsive sexual behavior are not currently available, although one has been performed by Martin (P Martin, MD, personal communication, 2006). There are no controlled investigations of neurotransmitter systems involved in individuals with impulsive-compulsive sexual behavior, genetic factors have not been studied, and there are no large-scale epidemiological studies of the disorder.

## CONCLUSION

At this stage of research, there is only limited evidence to classify impulsive-compulsive sexual behavior with chemical addictions. It is hoped, that as more research is done on this disorder, it will become clearer if this disorder should be classified in that manner or in some other manner.

Regardless of the classification used, this disorder represents a severe burden on those afflicted with it. Further research into its etiology and treatment is necessary.

Impulsive-compulsive sexual behavior is a little studied clinical phenomenon that affects ~ 5% to 6% of the population. It currently is classified as an impulsive-compulsive disorder NOS in the *DSM-IV-TR* or a sexual disorder NOS. It may be placed in a possible new category in *DSM-V* called substance and behavioral addictions. Some studies have documented that individuals with this disorder have an abnormally high total sexual outlet ( $\geq 7$  orgasms/week). Other studies document comorbidity with mood disorders, anxiety disorders, and substance abuse. The expressions of sexual behavior noted in these individuals are having multiple sexual partners and masturbation.

Randomized controlled clinical research in this area is lacking. One randomized controlled trial for treatment of this disorder has been performed and it showed some benefit for citalopram.<sup>24</sup> This study may have been limited in its ability to detect a difference between the drug and placebo group because of a high placebo response rate.

Multiple other medications have been used successfully in open label trials and case reports with no clear advantage found for one medication. Only one psychotherapy study<sup>22</sup> has been performed on this condition and it showed positive results.

Although there is little randomized, controlled evidence to guide recommendations, these authors recommend a tailored approach utilizing pharmacotherapy and psychotherapy. Benzodiazepines are to be avoided.

At this stage of research, there is only limited evidence to classify impulsive-compulsive sexual behavior with chemical addictions. It is hoped, that as more research is done on this disorder, it will become clearer if this disorder should be classified in that manner or in some other manner. **CNS**

## REFERENCES

1. Coleman E. Is your patient suffering from compulsive sexual behavior? *Psychiatr Ann.* 1992;22:320-325.
2. Coleman E. Compulsive Sexual Behavior: new concepts and treatments. *J Psychol Hum Sex.* 1991;4:37-52.
3. Money J. *Lovemaps: Clinical Concepts of Sexual/Erotic Health and Pathology, Paraphilia, and Gender Transposition in Childhood, Adolescence and Maturity.* New York, NY: Irvington Publishers; 1986.

4. Bradford JM. The paraphilias, obsessive compulsive spectrum disorder and the treatment of sexually deviant behaviour. *Psychiatr Q.* 1999;70:209-219.
5. Kafka MP, Prentky R. Fluoxetine treatment of nonparaphilic sexual addictions and paraphilias in men. *J Clin Psychiatry.* 1992;53:351-358.
6. Carnes P. *Out of the Shadows: Understanding Sexual Addiction.* Minneapolis, Minn: CompCare Publishers; 1983.
7. Carnes P. *The Sexual Addiction.* Minneapolis, Minn: CompCare Publishers; 1983.
8. Barth RJ, Kinder BN. The mislabeling of sexual impulsivity. *J Sex Marital Ther.* 1987;13:15-23.
9. Hollander E, Allen A. Is compulsive buying a real disorder, and is it really compulsive? *Am J Psychiatry.* 2006;10:1670-1672.
10. Coleman E, Raymond N, McBean A. Assessment and treatment of compulsive sexual behavior. *Minn Med.* 2003;86:42-47.
11. Coleman E. Is your patient suffering from compulsive sexual behavior? *Psychiatr Ann.* 1992;22:320-325.
12. Carnes P. The obsessive shadow. *Professional Counselor.* 1998;13:15-17.
13. Kinsey AC, Pomeroy WB, Martin CE. *Sexual Behavior in the Human Male.* Philadelphia, Penn: Saunders; 1948.
14. Kafka MP. Hypersexual desire in males: an operational definition and clinical implications for males with paraphilias and paraphilia-related disorders. *Arch Sex Behav.* 1997;26:505-526.
15. Laumann E, Michael R, Gagnon J. *The Social Organization of Sexuality.* Chicago, Ill: University of Chicago Press; 1994.
16. Kafka MP, Hennen J. Hypersexual desire in males: are males with paraphilias different from males with paraphilia-related disorders? *Sex Abuse.* 2003;15:307-321.
17. Kafka MP, Prentky R. Preliminary observations of the DSM-III-R Axis I comorbidity in men with paraphilias and paraphilia-related disorders. *J Clin Psychiatry.* 1994;55:481-487.
18. Kafka MP, Prentky RA. Attention-deficit/hyperactivity disorder in males with paraphilias and paraphilia-related disorders: a comorbidity study. *J Clin Psychiatry.* 1998;59:388-396.
19. Kafka MP, Hennen J. A DSM-IV Axis I comorbidity study of males (n = 120) with paraphilias and paraphilia-related disorders. *Sex Abuse.* 2002;14:349-366.
20. Black DW, Kehrberg LLD, Flumerfelt DL, Schlosser SS. Characteristics of 36 subjects reporting compulsive sexual behavior. *Am J Psychiatry.* 1997;154:243-249.
21. Raymond NC, Coleman E, Miner MH. Psychiatric comorbidity and compulsive/impulsive traits in compulsive sexual behavior. *Compr Psychiatry.* 2003;44:370-380.
22. Quadland MC. Compulsive sexual behavior: definition of a problem and an approach to treatment. *J Sex Marital Ther.* 1985;11:121-132.
23. Derogatis LR, Melisaratos N. The Brief Symptom Inventory: an introductory report. *Psychol Med.* 1983;13:595-605.
24. Wainberg ML, Muench F, Morgenstern J, et al. Citalopram vs. placebo in the treatment of compulsive sexual behaviors in gay and bisexual men. *J Clin Psychiatry.* In press.
25. Grant JE, Kim SW, Potenza MN, et al. Paroxetine treatment of pathological gambling: a multi-centre randomized controlled trial. *Int Clin Psychopharmacol.* 2003;18:243-249.
26. Kafka MP. Sertraline pharmacotherapy for paraphilias and paraphilia-related disorders: An open trial. *Ann Clin Psychiatry.* 1994;6:189-195.
27. Kafka M, Hennen J. Psychostimulant augmentation during treatment with selective serotonin reuptake inhibitors in men with paraphilias and paraphilia-related disorders: a case series. *J Clin Psychiatry.* 2000;61:664-670.
28. Coleman E, Gratzner T, Nevacsil L, Raymond NC. Nefazodone and the treatment of nonparaphilic compulsive sexual behavior: a retrospective study. *J Clin Psychiatry.* 2000;61:282-284.
29. Cesnik JA, Coleman E. Use of lithium carbonate in the treatment of autoerotic asphyxia. *Am J Psychother.* 1989;43:277-285.
30. Fedoroff JP. Buspirone hydrochloride in the treatment of transvestic fetishism. *J Clin Psychiatry.* 1988;49:408-409.
31. Fedoroff JP. Buspirone hydrochloride in the treatment of atypical paraphilia. *Arch Sex Behav.* 1992;21:401-406.
32. Azhar MZ, Varma SL. Response to clomipramine in sexual addiction. *Eur Psychiatry.* 1995;10:263-265.
33. Kruesi MJ, Fine S, Valladares L, Phillips RA Jr, Rapoport JL. Paraphilias: a double-blind crossover comparison of clomipramine versus desipramine. *Arch Sex Behav.* 1992;21:587-593.
34. Stein DJ, Hollander E, Anthony DT, et al. Serotonergic medications for sexual obsessions, sexual addictions, and paraphilias. *J Clin Psychiatry.* 1992;53:267-271.
35. Bourgeois JA, Klein M. Risperidone and fluoxetine in the treatment of pedophilia with comorbid dysthymia [letter]. *J Clin Psychopharmacol.* 1996;16:257-258.
36. Raymond NC, Grant JE, Kim SW, Coleman E. Treatment of compulsive sexual behavior with naltrexone and serotonin reuptake inhibitors: two case studies. *Int Clin Psychopharmacol.* 2002;17:201-205.
37. Khazaal Y, Zullino DF. Topiramate in the treatment of compulsive sexual behavior: case report. *BMC Psychiatry.* 2006;6:22.
38. Fong TW, De La Garza R, Newton TF. A case report of topiramate in the treatment of nonparaphilic sexual addiction. *J Clin Psychopharmacol.* 2005;25:512-514.
39. Coleman E. Treatment of compulsive sexual behavior. In: Rosen RC SR, Leiblum SR, eds. *Case Studies in Sex Therapy.* New York, NY: Guilford Press; 1995:333-349.
40. Bond AJ. Drug-induced behavioral disinhibition: incidence, mechanisms, and therapeutic implications. *CNS Drugs.* 1998;9:41-57.
41. Hollander E, Stein DJ. *Clinical Manual of Impulse Control Disorders.* Arlington, Va: American Psychiatric Publishing; 2006.
42. Trimble MR, Mendez MF, Cummings JL. Neuropsychiatric symptoms from the temporolimbic lobes. *J Neuropsychiatry Clin Neurosci.* 1997;9:429-438.
43. Lishman WA. Brain Damage in relation to psychiatric disability after head injury. *Br J Psychiatry.* 1968;114:373-412.
44. Miller BL, Cumming JL, McIntyre H, et al. Hypersexuality or altered sexual preference following brain injury. *J Neurol Neurosurg Psychiatry.* 1986;49:867-873.
45. Gondim FA, Thomas FP. Episodic hyperlibidism in multiple sclerosis. *Mult Scler.* 2001;7:67-76.
46. Devinsky O, Vazquez B. Behavioral changes associated with epilepsy. *Neurol Clin.* 1993;11:127-149.
47. Alkhalil C, Tanvir F, Alkhalil B, et al. Treatment of sexual disinhibition in dementia: case reports and review of the literature. *Am J Ther.* 2004;11:231-235.
48. Uitti RJ, Tanner CM, Rajput AH, et al. Hypersexuality with antiparkinsonism therapy. *Clin Neuropharmacol.* 1989;12:375-383.
49. Udry JR, Billy JO, Morris NM, Groff TR, Raj MH. Serum androgenic hormones motivate sexual behavior in adolescent boys. *Fertil Steril.* 1985;43:90-94.
50. Halpen CT, Udry JR, Campbell B, Suchindran C, Mason GA. Testosterone and religiosity as predictors of sexual attitudes and activity among adolescent males: a biosocial model. *J Biosoc Sci.* 1994;26:217-234.
51. Sherwin BB. A comparative analysis of the role of androgen in human male and female sexual behavior: the behavioral specificity, critical thresholds, and sensitivity. *Psychobiology.* 1988;16:416-425.
52. Martin PR, Petry NM. Are non substance related addictions really addictions? *Am J Addictions.* 2005;14:1-7.
53. Gold SN, Heffner CL. Sexual addiction: many conceptions, minimal data. *Clin Psychol Rev.* 1998;18:367-381.
54. Barth RJ, Kinder BN. The mislabeling of sexual impulsivity. *J Sex Marital Ther.* 1987;13:15-23.
55. Potenza MN. Should addictive disorders include non-substance-related conditions? *Addiction.* 2006;101(suppl 1):142-151.
56. Goodman A. Sexual addiction: designation and treatment. *J Sex Marital Ther.* 1992;18:303-314.
57. Jenike MA. Obsessive-compulsive and related disorders: a hidden epidemic. *N Engl J Med.* 1989;321:539-41.
58. McElroy SL, Pope HG, Keck PE, Hudson JI, Phillips KA, Strakowski SM. Are impulse-control disorders related to bipolar disorder? *Compr Psychiatry.* 1996;37:229-240.